

**KINGDOM OF BELGIUM**  
**INDUSTRIAL PROPERTY OFFICE**

**PATENT OF INVENTION**  
**No. 540095**

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**IMPROVEMENT OF SOUNDPROOF ROOF COVERINGS**  
(having formed the object of an application filed in France on 13<sup>th</sup> November 1954 –  
Statement released by the Applicants)

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## DESCRIPTION

Filed in support of an application of a

### PATENT OF INVENTION

Issued for the

Improvement of soundproof roof coverings

by

the Company called: ACIEROID et Monsieur CHADENIER (Jean)

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(International Convention: French Patent Application no. 679.654 dated 13<sup>th</sup> November 1954 under same names)

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As known, roof coverings are available, which consist of a plate coated with a thermal insulation towards the outside. A waterproof lining is generally placed over such an insulation. In particular, said roof coverings can be manufactured using ribbed steel elements.

These roof coverings are less subject to sound vibrations in comparison to classic industrial coverings, such as corrugated sheet iron, concrete, etc., ... Moreover, under highly admissible soundproof conditions they transmit noises from inside to the outside. However, up to now, such roof coverings did not provide a satisfactory soundproof level towards the outside for the noises coming from inside. In other words, the sound waves hitting the plate surface were reflected with an intensity such to cause a nuisance and even a stress to the people using the room covered by the roof covering. This inconvenience existed above all in the workshops where noisy operations were carried out, such as forge shops, coppersmith, etc., ...

Therefore, it is the object of the present invention to provide an improvement to the roof covering that will not just maintain its insulating capacities from a thermal standpoint and in view of noises transmission from outside to the inside, but where also its soundproof capacity concerning reflection of the sound waves produced inside the room towards the inside of the room is considerably increased.

The present invention consists essentially in piercing the steel plate forming the lower side of the roof covering that limits the space where people are staying, with holes in suitable number, shapes, surfaces and positions. Thus, a part of the sounds reaches the thermal insulation directly, which operates then as a sound absorber.

The inventors have noticed how the holes pierced in the plate are able to suppress reflection of the sound waves to a large extent (about 40%, as proved by the tests), and consequently the disturbing noise for the people in the room.

Figure 1 shows schematically a basic view of the invention.

Figure 2 is a perspective practical way to obtain a roof covering according to the invention.

According to the way commonly known, a roof covering consists of sheet plates 1 whereon an isolating layer 2 is fixed by any means, such as by gluing. A waterproof sheet, plate or coating 3 is finally fixed over this layer.

According to the present invention, the sheet plates 1 are pierced with proper holes suitably arranged instead of being solid plates as usually done so far. For instance, Figure 1 shows in A some small holes considerably round; in B an elliptic or oval hole with a crosswise axis; in C an analogous hole with a lengthwise axis; in D a hole having a lozenge form. These different examples are simply provided to show how the shape and size of the holes may be determined according to specific cases, without departing from the scope of the present invention. On the other side, the plate 1 may be coated all over its surface with identical or different holes, lined up holes, holes placed in quincunx or in bias, etc. Plate 1 may also have surface areas without holes, limiting the holes to certain areas conveniently selected. However, it is clear that all these executions are covered by the present invention.

In particular, in some cases the inventors have found it suitable to leave an area of the steel plates without holes, whereon the gluing plaster provided to fix the isolating coating over the sheet plate can be spread.

Figure 2 shows such an execution mode.

Reference 1 shows the metal plates (here ribbed steel plates). These plates have areas 4 pierced with round holes 5 relatively approached to each other, and areas 6 wherein no holes are pierced. The gluing plaster 7 is spread over these areas 6 and an isolating coating 2 laid over the whole surface. Finally, according to the usual way, the coating 2 is covered with a proper adhesive layer 8 and then with a waterproof coating 3.

Of course, the present invention applies not only to flat roofing, but also to roof coverings of any suitable shapes, such as parabolic, dome shaped, and so on. Moreover, even if the present invention has been particularly described for application to roof coverings made of ribbed steel plates, it can be applied as well to roof coverings of any metal, either ribbed or not.

## **CLAIMS**

It is the object of the present invention to provide:

1. An improvement to roof coverings coated with a thermal isolation, and more in particular to roof coverings of the kind made of ribbed steel plate, characterized in that the metal is pierced with holes of any shapes, sizes, arrangements and groups, in order to reduce the sound level from the roof covering to the inside, i.e. its capacity of reflecting the sound waves received inside.
2. A particular execution mode according to which the plates consist of areas pierced with holes relatively approached to each other and solid areas, the latter provided to receive the adhesive plaster used to fix the isolating coating over the plate.